Annual Groundwater Quality Summary Report

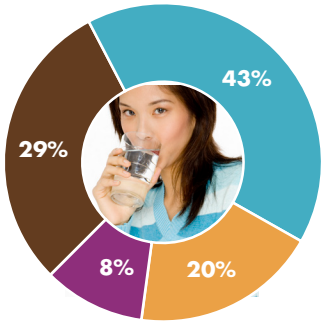
For Testing Performed in 2017

Santa Clara Valley Water District

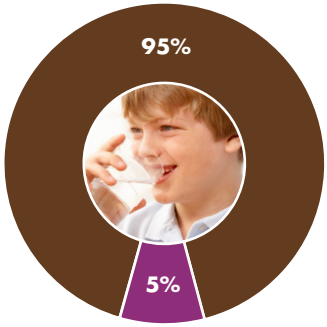
Protecting our Groundwater

Groundwater is an essential local water resource, providing about half of the water used in Santa Clara County each year. In some areas, groundwater is the only source of drinking water. Protecting our groundwater helps ensure that adequate supplies are available now and in the future.

NORTH COUNTY WATER USE



SOUTH COUNTY WATER USE



- Groundwater
- Treated Water
- Hetch-Hetchy
- Other Local and Recycled Water

The Santa Clara Valley Water District works to safeguard groundwater by:

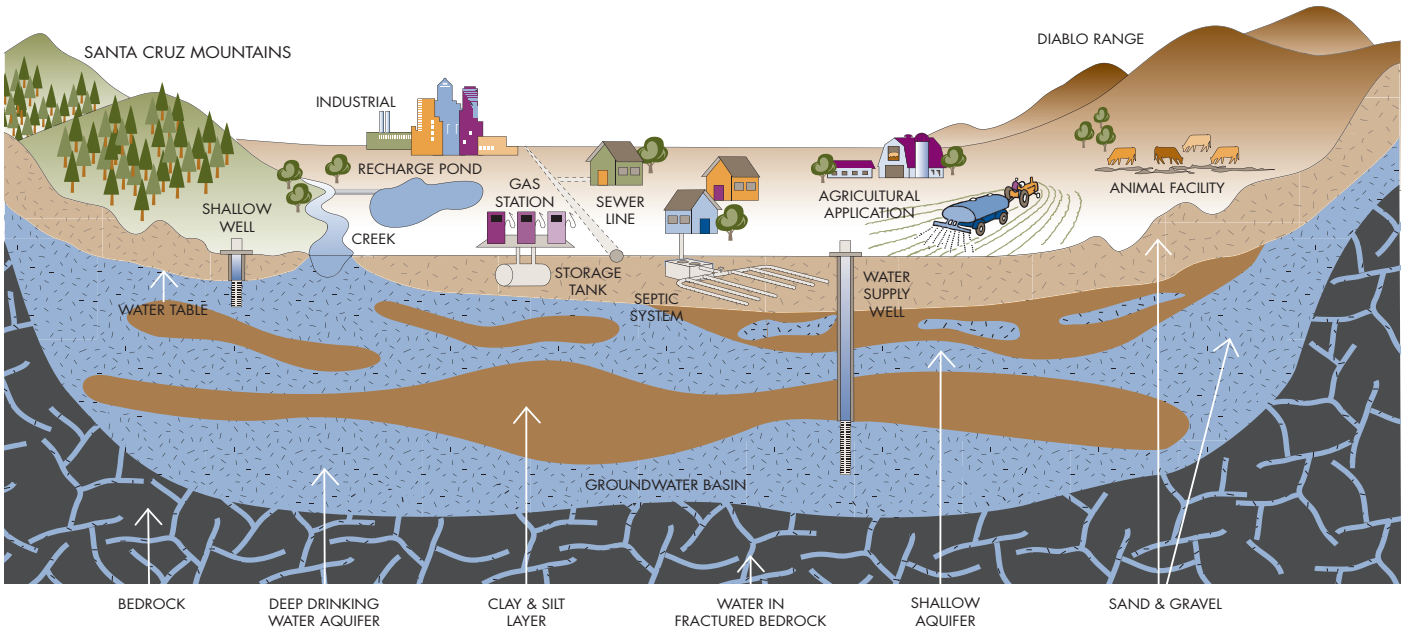
- Replenishing groundwater basins with local and imported surface water.
- Reducing demands on groundwater through the delivery of treated water, water conservation, and water recycling.
- Monitoring groundwater and conducting programs to protect against contamination.

Well water testing throughout the county indicates that groundwater quality is generally very good. All drinking water, including bottled water, trail closure, contains small amounts of some contaminants. As water travels over the surface of the land and through the ground, it dissolves naturally occurring minerals and can pick up substances from animal and human activities.

Contaminants that may be present in groundwater include:

- Microbial contaminants such as viruses and bacteria that may come from sewage treatment plants, sewer lines, septic systems, agricultural operations, and wildlife.
- Inorganic contaminants such as salts and metals that can be naturally occurring or result from industrial or domestic wastewater discharges, animal facilities, farming, and mining.
- Insecticides, herbicides, and fertilizers, that may come from agriculture, and residential uses.
- Organic chemicals from industrial processes, gas stations, dry cleaners, agricultural application, and septic systems.
- Radioactive contaminants that are naturally occurring in our area.

The presence of contaminants does not necessarily indicate that water poses a health risk. State and federal drinking water standards identify maximum contaminant levels that relate to health risk.



2017 Groundwater Quality Summary

Monitoring confirms generally high groundwater quality, but South County nitrate is a concern

In 2017, the water district sampled over 290 domestic wells and evaluated data from another 225 public water supply wells in North and South County (see map on back page). Nearly all wells tested meet drinking water standards with the notable exception of nitrate in some South County domestic wells. The water district works with regulatory and land use agencies on this ongoing challenge.

The table below summarizes the results for any substance detected in a domestic or public water supply well in 2017; not every well was tested for all substances listed. Although Maximum Contaminant Levels (MCLs) apply only to public water systems, MCLs are helpful in understanding results from domestic wells. Please note this regional summary may not reflect the water quality in every well since each property and well is unique.

Primary Drinking Water Standards – Public Health Related Standards				North County		South County		
Inorganic Contaminants	Units	Maximum Contaminant Level	Public Health Goal	Medium	Range	Medium	Range	Typical Sources
Aluminum	ppb	1,000	600	3.18	ND - 1,700	11.1	ND - 820	Erosion of natural deposits
Antimony	ppb	6	1	ND	ND	ND	ND - 9.9	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	ppb	10	0.004	ND	ND - 4	ND	ND - 4	Erosion of natural deposits; glass and electronics production waste
Asbestos	MFL	7	7	ND	ND - 0.7	2.99	ND - 18	Erosion of natural deposits
Barium	ppb	1,000	2,000	135	ND - 310	97.9	ND - 300	Erosion of natural deposits
Chromium (total)	ppb	50	–	1.10	ND - 1.7	1.20	ND - 3.8	Erosion of natural deposits; metal plating
Chromium-6 (hexavalent)	ppb	–	0.02	2.20	ND - 7.9	4.00	ND - 7.8	Erosion of natural deposits; metal plating and industrial discharges
Fluoride	ppm	2	1	0.141	ND - 0.84	0.150	ND - 1.06	Erosion of natural deposits
Mercury	ppb	2	1.2	ND	ND - 1.9	ND	ND	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and cropland
Nickel	ppb	100	12	1.20	ND - 16	ND	ND - 4.5	Erosion of natural deposits; discharge from metal industries
Nitrate + Nitrite (as N)	ppm	10	10	2.40	ND - 6.1	3.40	0.41 - 7.1	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Nitrate (as N)	ppm	10	10	3.00	ND - 29.2	6.13	0.06 - 73.7	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Perchlorate	ppb	6	1	ND	ND	ND	ND - 4.5	Solid rocket propellant, fireworks, explosives, flares, matches, and a variety of industries
Selenium	ppb	50	30	6	ND - 11	ND	ND - 5	Erosion of natural deposits
Radioactive Contaminants								
Gross Alpha	pCi/L	15	–	2	ND - 8.3	ND	ND - 0.43	Erosion of natural deposits
Gross Beta	mrem/yr	4	–	–	–	0.148	0.148	Erosion of natural deposits
Radium 226	pCi/L	–	0.05	ND	ND	0.128	0.128	Erosion of natural deposits
Tritium	pCi/L	20,000	400	–	–	170	170	Erosion of natural deposits
Uranium	pCi/L	20	0.43	ND	ND	0.294	0.294	Erosion of natural deposits
Volatile Organic Chemicals								
1,1,1-Trichloroethane (1,1,1-TCA)	ppb	200	1,000	ND	ND - 1.2	ND	ND	Discharge from metal degreasing sites and other industrial processes
1,1-Dichloroethene (1,1-DCE)	ppb	6	10	ND	ND - 0.87	ND	ND	Discharge from industrial processes
Haloaccetic Acids (HAA5)	ppb	60	–	4.40	4.40	–	–	Drinking water chlorination
Tetrachloroethene (PCE)	ppb	5	0.06	ND	ND	ND	ND - 2.2	Discharge from industrial processes, dry cleaners, and automotive repair
Total Trihaloethanes (THMs)	ppb	80	–	ND	ND - 21.2	ND	ND - 1.6	Drinking water chlorination
Microbiological Contaminants[1]				Present	Absent	Present	Absent	Typical Sources
E. Coli Bacteria		–	–	4	23	5	263	Human and animal fecal waste
Total Coliform Bacteria		–	–	11	16	91	177	Naturally present in the environment

Notes: 1) The table shows the number of domestic wells tested that had bacteria present or absent. Public water systems are required to ensure that fewer than 5% of samples have total coliform present and that no samples have e.coli present. Domestic wells are not subject to these standards.

Terms and Definitions

Color units: A measure of color in water

Maximum Contaminant Level (MCL): The highest level of a contaminant allowed in public water systems. Primary MCLs are set as close to PHGs as is economically and technologically feasible. Secondary MCLs protect the odor, taste, and appearance of drinking water.

Median: The "middle" value of the results, with half of the values above the median and half of the values below the median.

MFL: Million Fibers per Liter

mrem/yr: Millirems per year

ND: Not detected (at laboratory testing limit)

NTU: Nephelometric Turbidity Units

pCi/L: picoCuries per liter (a measure of radiation)

– Indicates there is no related drinking water standard, or that the substance was not tested.

ppm: parts per million (milligrams per liter)

ppb: parts per billion (micrograms per liter)

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to human health. PHGs are set by the California EPA.

TON: Threshold Odor Number

uS/cm: microSiemens per centimeter (a measure of the dissolved inorganic salt content)

2017 Groundwater Quality Summary

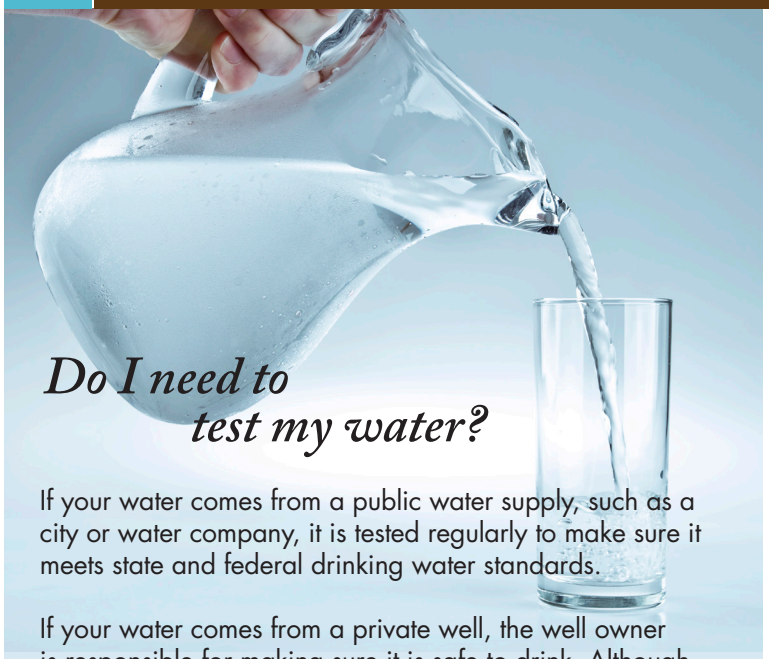
Secondary Drinking Water Standards – Aesthetic Standards	Units	Maximum Contaminant Level	Public Health Goal	North County Medium	North County Range	South County Medium	South County Range	Typical Sources
Chloride	ppm	250	–	49.0	13 - 89	46.0	17 - 135	Runoff/leaching from natural deposits; seawater influence
Color	Color Units	15	–	5.00	ND - 31	6.00	ND - 9	Naturally occurring organic materials
Copper[1]	ppb	1,000	300	1.80	1.4 - 120	3.10	ND - 16.6	Internal corrosion of household plumbing systems; erosion of natural deposits
Foaming Agents (MBAS)	ppb	500	–	ND	ND - 0.1	ND	ND	Municipal and industrial waste discharges
Iron	ppb	300	–	51.9	41 - 3,900	2.71	26 - 6,300	Leaching from natural deposits; industrial wastes
Manganese	ppb	50	–	2.69	ND - 240	0.745	ND - 1,200	Leaching from natural deposits; industrial wastes
Odor Threshold	TON	3	–	ND	ND - 1.4	ND	ND	Naturally occurring organic materials
pH	pH units	6.5 - 8.5	–	7.53	6.23 - 8.1	7.75	7.45 - 8	Erosion of natural deposits; carbon dioxide emissions; rainfall
Specific Conductance	uS/cm	900	–	664	349 - 1,840	655	299 - 2,380	Substances that form ions when in water; seawater influence
Sulfate	ppm	250	–	47.0	3.6 - 196	38.0	ND - 224	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS)	ppm	500	–	400	270 - 1,100	376	244 - 608	Runoff/leaching from natural deposits
Turbidity	NTU	5	–	0.460	ND - 4.9	0.205	ND - 2	Soil runoff
Zinc	ppb	5,000	–	0.865	ND - 670	4.17	ND - 340	Runoff/leaching from natural deposits; industrial wastes
Other Water Quality Parameters								
Alkalinity (total, as CaCO3)	ppm	–	–	220	120 - 380	179	93 - 344	Atmospheric and vadose zone carbon dioxide
Boron	ppb	–	–	ND	ND - 506	120	ND - 2,000	Erosion of natural deposits
Bromide	ppm	–	–	0.140	ND - 0.49	0.160	ND - 1.56	Erosion of natural deposits; seawater intrusion; sea spray
Bromodichloromethane (THM)	ppb	–	–	ND	ND - 5.5	ND	ND	Drinking water chlorination
Bromoform (THM)	ppb	–	–	ND	ND - 5.4	ND	ND	Drinking water chlorination
Calcium	ppm	–	–	63.0	23.5 - 110	53.1	32.9 - 99.6	Erosion of natural deposits
Carbon dioxide	ppb	–	–	8.13	ND - 240	ND	ND	Atmospheric sources; dissolution of carbonate rocks
Carbonate (as CO3)	ppm	–	–	ND	ND - 2	ND	ND	Atmospheric sources; dissolution of carbonate rocks
Chloroform (THM)	ppb	–	–	ND	ND - 2.74	ND	ND - 1.6	Drinking water chlorination
Cobalt	ppb	–	–	ND	ND - 0.21	ND	ND	Leaching from natural deposits; industrial wastes
DCPA (Total Di & Mono Acid Degradates)	ppb	–	–	ND	ND - 0.7	ND	ND	Herbicide used to control grasses and weeds
Dibromochloromethane (THM)	ppb	–	–	ND	ND - 7.9	ND	ND	Drinking water chlorination
Dichloroacetic Acid	ppb	–	–	2.7	2.7	–	–	Drinking water chlorination
Hardness (total, as CaCO3)	ppm	–	–	290	122 - 636	271	ND - 728	Erosion of natural deposits
Lead[1]	ppb	–	0.2	0.390	ND - 16	ND	ND - 2.35[2]	Erosion of natural deposits; internal corrosion of household water plumbing systems; discharges from industrial manufacturers
Lithium	ppb	–	–	5.60	ND - 25	10.0	ND - 28	Erosion of natural deposits; discharge from industrial uses
Magnesium	ppm	–	–	29.1	8.2 - 67	31.0	17 - 59.2	Erosion of natural deposits
Molybdenum	ppb	–	–	0.900	ND - 5.1	ND	ND - 3.5	Erosion of natural deposits
Monobromoacetic Acid (MBAA)	ppb	–	–	1.7	1.7	–	–	Drinking water chlorination
Orthophosphate	ppm	–	–	0.070	ND - 2.3	ND	ND - 1.56	Leaching from natural deposits; agricultural runoff
Potassium	ppm	–	–	1.30	ND - 2.1	1.25	ND - 2.1	Erosion of natural deposits
Silica	ppm	–	–	26.7	25 - 28.4	27.1	12 - 47.7	Erosion of natural deposits
Sodium	ppm	–	–	32.0	15 - 84.8	26.0	13.2 - 80.5	Erosion of natural deposits
Vanadium	ppb	–	–	2.79	ND - 13.5	1.70	ND -14	Erosion of natural deposits; discharge from industrial uses

Notes:

1) Lead and copper do not have primary MCLs, but have "action levels" of 15 and 1,300 ppb, respectively. These substances are regulated by the state for public water systems since they can adversely affect public health.

2) One high lead result (1,000 ppb) was not confirmed by follow-up testing. The next highest level measured was 2.35 ppb as shown.

– Indicates there is no related drinking water standard, or that the substance was not tested.



Do I need to test my water?

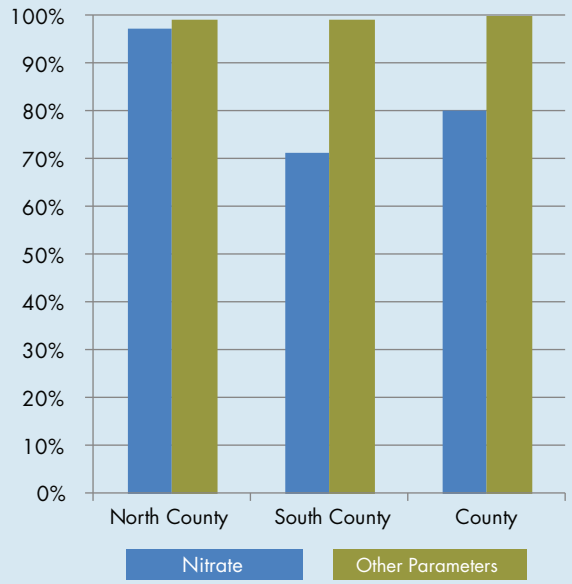
If your water comes from a public water supply, such as a city or water company, it is tested regularly to make sure it meets state and federal drinking water standards.

If your water comes from a private well, the well owner is responsible for making sure it is safe to drink. Although the water district monitors regional groundwater quality, every property and well is unique. Some contaminants are colorless and odorless, so the first step in protecting your health is having your water tested.

The water district encourages private well owners to have their well water tested by a state-certified laboratory annually or anytime there is a change in taste, odor, or appearance. If your water contains any contaminant above drinking water standards, you may want to install a treatment system or use an alternative source of water.

The water district currently offers eligible domestic well users free basic water quality testing and rebates of up to $500 for nitrate treatment systems. Call the Groundwater Hotline at (408) 630-2300 to find out more.

WATER SUPPLY WELLS TESTED IN 2017 MEETING PRIMARY DRINKING WATER STANDARDS



Everyone has a role in protecting groundwater. Well owners should maintain their wells and septic systems, and create a zone of protection around their wells where potential contaminants are not used or stored. See the water district's Guide for the Private Well Owner at www.valleywater.org for helpful tips. All residents can help by conserving water and by raising awareness that activities on the land surface can affect our largest drinking water reservoir, which is beneath our feet.

Hot Topics in Water Quality

Nitrate

As shown in the chart to the left, nitrate is an ongoing challenge, particularly in South County. Common sources are fertilizers, septic systems and livestock waste, so nitrate is often higher in rural and agricultural areas.

Nitrate can interfere with the blood's ability to transport oxygen and is of greatest concern for infants and pregnant women. The effects of consuming high levels of nitrate are often referred to as "blue baby syndrome" and symptoms include shortness of breath and blueness of the skin.

The water district monitors nitrate conditions and trends, helps dilute nitrate through groundwater recharge, and works with land use and regulatory agencies. To help reduce domestic well owners' exposure to elevated nitrate, the water district is offering rebates of up to $500 for eligible treatment systems. Call the Groundwater Hotline at (408) 630-2300 for more information.

Perchlorate

Perchlorate is a salt used in rocket fuel, highway flares, fireworks and other products. At high levels, perchlorate can interfere with the thyroid gland and affect hormones that regulate metabolism and growth.

Perchlorate contamination from a former highway flare manufacturer in Morgan Hill was first discovered in 2000. At the urging of the water district and the community, the Central Coast Regional Water Quality Board has taken timely action to restore groundwater quality.

Due to cleanup activities and groundwater recharge, perchlorate levels have decreased dramatically. The area affected is getting smaller, now extending from Tennant Avenue south to approximately San Martin Avenue. The responsible party continues to remediate and monitor contaminated groundwater, and provides treatment systems or alternative water supplies for water supply wells with high levels of perchlorate (currently six).

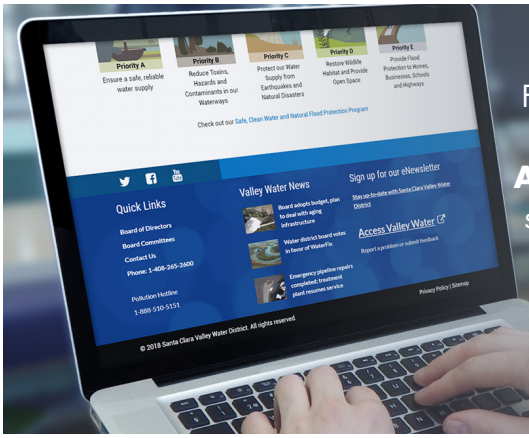
You live on a groundwater basin

NORTH COUNTY
Generally extends north from Metcalf Road to San Francisco Bay

SOUTH COUNTY
Extends from the Coyote Valley south to the Pajaro River

Health and education information

All drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained from the U.S. Environmental Protection Agency's Safe Drinking Water Hotline **(800-426-4791),** the California Division of Drinking Water **(www.waterboards.ca.gov/drinking_water/programs)**, the California Office of Environmental Health Hazard Assessment **(*www.oehha.ca.gov/water*)**, or from your healthcare provider.



CONTACT US

For more information, contact us at **(408) 630-2964** or by email at **gcook@valleywater.org.** Or use our **Access Valley Water** customer request and information system at valleywater.org to find out the latest information on district projects or to submit questions, complaints or compliments directly to a district staff person.

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